TEMPE STANDARD SHARED PARKING MODEL

Tempe's "Standard Shared Parking Model" can be used as a basis for predicting the Parking Demand for a particular mix of uses on a site. The model assumes that every separate use will actually need the full amount of parking that is called for by the ratios in the Ordinance at some point (called the "peak" period for the use) during the day. For example, in the real world, some uses (like nightclubs) peak in the evening; others (like offices) peak in the morning or afternoon. Where different uses need parking at different times of the day, there is an opportunity for them to share parking. This means that the total number of stalls needed to serve a "mixed use" site (the Parking Demand) may be significantly less than the number of stalls that would have to be built if each of the uses had to provide parking on its own (the Parking Required by this Code).

The Standard Shared Parking Model is a tool for estimating the Parking Demand of a specific mix of uses. It is called "standard" because each of the demand curves represents the parking needed for an average, typical use, based on studies and observations collected by staff over a number of years. The "curves" are represented below as a table showing the percent of the Code requirement for such uses, by hour of day.

These curves can be adapted to fit the specific needs of a major tenant on the site. The advantage of doing this is that the mode will be more accurate in predicting that tenant's share of the parking throughout the day. The disadvantage is that the model will be unique, and may not work as well if that tenant is replaced by an average, typical user in the future. In addition to changing the curves, one might also consider the impact of transit availability (reliable mass transit serving the site), trip reduction programs (van and carpooling, etc.) and captive market effects (where users serve patrons who are already on site), as well as any users who might need more parking than the Code ratios require. Any modifications to the standard model should be based on a "professional parking analysis and management study", as described in a companion information sheet available from the Development Services Department.

Enclosed: Instructions on how to apply model.

PARKING ANALYSIS AND MANAGEMENT STUDY

Section 4-604 of Tempe's Zoning & Development Code refers to submittal of a professional Parking Analysis and Management Study where applicant is basing his parking on the predicted demand, rather than on the amount required by Code. To assist in the process, staff has prepared a more detailed description of the elements in such a Study, in a format that could be adapted as needed for each site:

"professional": The study should be stamped by a Professional Engineer who is registered in the State of Arizona and who has extensive experience with traffic and parking issues in private development. The consultant's qualifications should be briefly described in the study.

"analysis": A review of the existing and proposed parking conditions on the site, including:

(a) A brief history of the phases of site development, with details of City approvals of variances, use permits, etc.

(b) An overview of any parking problems that currently exist on the site, based on personal interviews with tenants, managers and owners, and on direct observations and counts by the consultant.

(c) A comparison of the parking required by Code with the parking provided, both for current and proposed uses on the site.

(d) An estimate of the parking demand for the site, along with the methodology (tables, graphs, assumptions, etc.) supporting that estimate.

(e) A discussion of the probable scenarios and problems that will need to be addressed if the parking is provided in relation to demand, as proposed.

(f) Any special conditions to protect the public interest recommended by the consultant if the project is approved as proposed.

"management" A summary of all implementation strategies needed to deal with the anticipated problems mentioned in (e) above, promoting any or all of the following, for example:

(1) Ride sharing (incentives for carpools, vanpooling, set up programs to encourage high occupancy vehicles through

specific incentives and policies, etc.).

(2) Transit use (utilize flexible subsidies and fringe benefits, locate transit stops strategically, etc.

(3) Alternative styles of transportation (encourage bicycles, motorcycles, walking, consider market rates for employee parking, promote off-peak trips, etc.

(4) Convenient pedestrian circulation on-site (quality design of walkways, consider trams, create parking zones, cluster uses sharing customers, etc.

(5) Efficient use of parking (supply a mix of short-term and long-term parking, cluster uses sharing parking minimize reserved spaces, consider permits, etc.).

(6) Effective management (assign administrative responsibility for program to one person, section or company, achieve consistency in policy and enforcement, undertake periodic monitoring, file update reports with City, review impact of new tenants, etc.).

To use the model, take the following steps:

1. Verify that all uses on site have equal access to all parking spaces on site, that there are cross access easements across all property lines, and that there are no legal impediments to sharing the parking.
2. List all uses on the site.
3. Parking Required: Calculate the parking required for each use according to the ratios in the Code.
4. Adjust for transit, trip reduction, captive market or surplus need effects; if you change the model, state your assumptions clearly.
5. Group the uses according to the categories in Table I.
6. Add up the total number of spaces required for each group.
7. Multiply that number times the percent shown in the Tables ("80" means 80% or .8 of the Code requirement) for each hour for each group.
8. Add up the total number of spaces needed by hour of day.
9. Parking Demand: Find the maximum number of spaces needed by hour of day: this will represent the minimum number of spaces that the particular mix will actually need.
10. Parking Provided: Add between 5% (for larger sites with stable Demand throughout the year) and 10% (for small sites with a Demand that fluctuates throughout the year) to the Parking Demand to get a realistic estimate of the amount of parking you should provide for this mix of uses.

SHARED PARKING: MONDAY THROUGH FRIDAY

TYPE OF USE	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
ATHLETIC																		
health club/spa	45	35	45	50	45	45	45	40	40	70	100	100	85	75	20	15	5	0
team sports/court	45	35	45	50	45	45	45	40	40	70	100	100	85	75	20	15	5	0
kid playland	0	0	0	40	50	70	80	80	50	60	80	90	100	100	40	5	2	0
AUTO SALES/SERVICE	20	63	93	100	100	90	90	97	93	77	47	23	7	7	3	3	0	0
BANK	20	63	93	100	100	90	90	97	93	77	47	23	7	7	3	3	0	0
BAR	0	0	2	10	10	20	20	10	15	25	40	50	70	90	100	100	100	100
BOWLING ALLEY	0	0	15	20	20	25	30	35	40	40	50	100	100	100	70	40	10	5
CAR WASH	20	63	93	100	100	90	90	97	93	77	47	23	7	7	3	3	0	0
CONFERENCE	0	50	100	100	100	100	100	100	100	100	100	100	100	100	100	50	0	0
CONVENIENCE/GAS	80	100	100	50	40	50	40	40	50	60	100	100	90	80	80	70	50	20
DAY CARE	60	100	80	30	30	50	25	25	25	80	95	25	10	0	0	0	0	0
GOLF																		
course	100	100	95	90	90	85	90	95	95	95	95	80	60	5	5	2	2	0
driving range	40	90	100	95	50	100	60	50	50	40	70	90	90	80	40	10	2	0
mini-golf	0	0	10	10	20	30	30	25	20	25	25	40	60	100	100	80	30	2
HOSPITAL																		
patients/visits	0	0	50	100	90	50	30	30	30	30	40	80	100	100	60	20	10	10
doctors/shift	100	100	70	60	70	70	60	60	60	80	80	50	50	40	30	25	20	20
emp/shift	60	80	90	100	100	100	100	100	100	90	80	80	60	50	40	30	25	25
HOTEL/MOTEL	85	65	55	45	35	30	30	35	35	45	60	70	75	90	95	100	100	100
LODGE/CLUB	0	0	2	10	10	20	20	10	15	25	40	50	70	90	100	100	100	100
MANUFACTURING	75	85	100	100	90	80	85	95	95	95	50	25	10	10	5	5	2	2
MORTUARY	0	0	5	5	2	1	2	5	2	2	1	1	10	20	20	10	0	0
MUSEUM	8	18	42	68	87	97	100	97	95	87	79	82	89	87	61	32	13	0
OFFICE																		
medical clinic	10	60	100	100	100	80	100	100	100	100	80	10	5	0	0	0	0	0
general	20	63	93	100	100	90	90	97	93	77	47	23	7	7	3	3	0	0
call center	20	60	100	100	100	100	100	100	100	100	100	100	100	100	100	90	50	30
POOL/BILLIARDS	0	0	5	15	25	30	25	25	25	25	30	40	60	100	100	100	50	20
RESTAURANT																		
general	2	5	10	20	30	50	70	60	60	50	70	90	100	100	100	90	70	50
drive-thru	30	40	10	20	30	70	70	40	30	35	70	100	100	70	40	30	10	5
take-out	0	5	10	20	80	90	100	50	25	30	60	65	70	65	30	15	5	0
RESIDENTIAL																		
bed & breakfast	100	100	50	20	10	10	10	10	15	25	50	60	80	90	100	100	100	100
nursing home	20	60	100	100	100	100	100	100	100	100	100	50	20	20	20	20	20	20
single family	87	79	73	68	59	60	59	60	61	66	77	85	94	96	98	99	100	100
elderly apts.	100	90	85	80	70	70	70	70	70	75	85	90	95	95	100	100	100	100
apartments	87	79	73	68	59	60	59	60	61	66	77	85	94	96	98	99	100	100
fraternity/sorority	87	79	73	68	59	60	59	60	61	66	77	85	94	96	98	99	100	100
RETAIL	8	18	42	68	87	97	100	97	95	87	79	82	89	87	61	32	13	0
SCHOOL																		
elementary / jr. high	25	80	100	100	100	80	75	95	95	85	70	25	15	10	5	5	2	2
high school / college	50	100	100	100	95	70	95	95	85	35	50	20	70	80	80	50	30	15
STADIUM/ARENA	0	0	0	0	0	0	0	0	0	2	5	20	100	100	100	100	50	1
THEATER																		
movie	0	0	0	0	0	30	70	70	70	70	70	60	90	100	100	100	80	70
live performance	0	0	2	5	5	5	60	70	70	70	5	5	90	100	100	100	2	0
VIDEO ARCADE	0	0	10	10	15	40	30	10	10	40	60	80	100	100	100	50	20	10
WAREHOUSE/R&D	75	85	100	100	90	80	85	95	95	95	50	25	10	5	2	0	0	0
WORSHIP, PLACE OF	0	0	5	5	2	1	2	5	2	2	1	1	10	20	20	10	0	0

SHARED PARKING: SATURDAY THROUGH SUNDAY

TYPE OF USE	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
ATHLETIC																		
health club/spa	5	20	45	60	55	40	40	35	35	50	45	35	25	20	15	5	0	0
team sports/court	5	20	45	60	55	40	40	35	35	50	45	35	25	20	15	5	0	0
kid playland	0	0	0	10	10	40	40	20	20	30	60	90	100	100	40	5	2	0
AUTO SALES/SERVICE	7	20	25	25	35	35	30	20	15	15	5	2	2	0	0	0	0	0
BANK	7	20	25	25	35	35	30	20	15	15	5	2	2	0	0	0	0	0
BAR	0	0	2	5	5	10	20	10	15	25	40	50	70	90	100	100	100	100
BOWLING ALLEY	0	0	40	40	40	30	20	25	30	30	20	20	50	80	90	80	40	10
CAR WASH	7	20	25	25	35	35	30	20	15	15	5	2	2	0	0	0	0	0
CONFERENCE	0	30	50	50	50	50	50	50	50	50	20	0	0	0	0	0	0	0
CONVENIENCE/GAS	10	10	15	20	30	50	50	50	40	50	60	60	60	70	60	30	20	10
DAY CARE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GOLF																		
course	100	100	95	90	90	85	90	95	95	95	95	80	60	5	5	2	2	0
driving range	40	90	100	95	50	100	60	50	50	40	70	90	90	80	40	10	2	0
mini-golf	0	0	10	10	20	30	30	25	20	25	25	40	60	100	100	80	30	2
HOSPITAL																		
patients/visits	0	0	50	100	90	50	30	30	30	30	40	80	100	100	60	20	10	10
doctors/shift	100	100	70	60	70	70	60	60	60	80	80	50	50	40	30	25	20	20
emp/shift	60	80	90	100	100	100	100	100	100	90	80	80	60	50	40	30	25	25
HOTEL/MOTEL	70	60	50	40	35	30	30	35	40	50	60	70	80	90	95	100	100	100
LODGE/CLUB	0	0	2	5	5	10	20	10	15	25	40	50	70	90	100	100	100	100
MANUFACTURING	5	25	50	50	45	40	40	35	30	25	20	10	5	2	0	0	0	0
MORTUARY	10	30	90	100	100	50	20	10	5	5	5	30	40	40	20	10	2	0
MUSEUM	3	10	30	45	73	85	95	100	100	90	75	65	60	55	40	38	13	0
OFFICE																		
medical clinic	0	20	80	90	90	60	20	10	10	10	50	0	0	0	0	0	0	0
general	7	20	25	25	35	35	30	20	15	15	5	2	2	0	0	0	0	0
call center	20	20	30	30	40	40	50	50	50	50	40	30	10	10	5	5	5	5
POOL/BILLIARDS	0	0	5	10	15	20	20	25	25	35	40	50	60	100	100	100	50	20
RESTAURANT																		
general	2	3	6	8	10	30	45	45	45	45	60	90	95	100	100	95	85	70
drive-thru	2	3	6	8	10	30	45	45	45	45	60	90	95	100	100	95	85	70
take-out	2	3	6	8	10	30	45	45	45	45	60	90	95	100	100	95	85	70
RESIDENTIAL																		
bed & breakfast	100	100	50	20	10	10	10	10	15	25	50	60	80	90	100	100	100	100
nursing home	20	25	50	50	50	50	50	50	50	50	50	30	20	20	20	20	20	20
single family	95	88	81	74	71	71	70	71	73	75	81	85	87	92	95	96	98	100
elderly apts.	100	90	85	80	70	70	70	70	70	75	85	90	95	95	100	100	100	100
apartments	95	88	81	74	71	71	70	71	73	75	81	85	87	92	95	96	98	100
fraternity/sorority	95	88	81	74	71	71	70	71	73	75	81	85	87	92	95	96	98	100
RETAIL	3	10	30	45	73	85	95	100	100	90	75	65	60	55	40	38	13	0
SCHOOL																		
elementary / jr. high	2	5	10	15	10	10	15	10	10	5	2	2	0	0	0	0	0	0
high school / college	0	5	40	40	20	10	30	30	30	20	10	5	5	5	2	0	0	0
STADIUM/ARENA	0	0	0	0	2	50	100	100	100	100	5	20	100	100	100	100	50	1
THEATER																		
movie	0	0	0	0	0	30	70	70	70	70	70	80	90	100	100	100	80	70
live performance	0	0	2	5	5	5	60	100	100	100	5	5	90	100	100	100	2	0
VIDEO ARCADE	0	0	20	30	40	60	70	70	90	90	100	100	100	100	100	90	50	10
WAREHOUSE/R&D	5	25	50	50	45	40	40	35	30	25	20	10	0	0	0	0	0	0
WORSHIP, PLACE OF	10	30	90	100	100	50	20	10	5	5	5	30	40	40	20	10	2	0